

Modelling Quality

We read about modelling quality in a previous lecture. Now we look at how this affects our backtesting.

What is Modelling Quality?

When you run a simulation in Metatrader 4, the program gives you a number called modelling quality. This number measures the percentage of lower timeframes which are taken into account when evaluating a strategy. The idea was simply that the more lower timeframes you take, the “finer the grain” of your simulations and the better their quality.¹

Model	Open prices only (only for Expert Advisors that explicitly control bar opening)		
Parameters	MagicNumber=12345; SignalMail=false; Lots=1; Slippage=3; UseStopLoss=true; StopLoss=30; UseTakeProfit=false; TakeProfit=0; UseTrailingStop=false; TrailingStop=30; sma_short=10; sma_long=40; atr_period=20; atr_shift=11; isSizingOn=true; Risk=1;		
Bars in test	2541 Ticks modelled	4081 Modelling quality	n/a

Model	Every tick (the most precise method based on all available least timeframes)		
Parameters	MagicNumber=12345; SignalMail=false; Lots=1; Slippage=3; UseStopLoss=true; StopLoss=30; UseTakeProfit=false; TakeProfit=0; UseTrailingStop=false; TrailingStop=30; sma_short=10; sma_long=40; atr_period=20; atr_shift=11; isSizingOn=true; Risk=1;		
Bars in test	2541 Ticks modelled	10020724 Modelling quality	90.00%

Using “Open Prices” will give you a modelling quality of n/a. Using “Every tick” will give you a modelling quality of 99% or 90% depending on whether you have tick data or just 1min data.

A higher modelling quality means that the system was simulated under a “higher resolution” data close to tick data. The modelling quality number is calculated according to the following formula (not important):

Modelling Quality =

$((0.25 * (\text{StartGen} - \text{StartBar}) +$

$0.5 * (\text{StartGenM1} - \text{StartGen}) +$

$0.9 * (\text{HistoryTotal} - \text{StartGenM1})) / (\text{HistoryTotal} - \text{StartBar})) * 100\%$

¹ <http://mechanicalforex.com/>

So the higher the Modelling quality, the better? Nope!

A higher modelling does not necessarily imply more accurate backtesting. This will depend on the characteristics of your robot.

Case A:

A robot trading on End-of-Day data. This means that the robot analyses the market based on closing daily prices. Since there isn't a need to analyse lower timeframes, conducting "Open Prices" tests will give the same results as "Every Tick" tests.

Case B:

A robot scalping using tick data. With a 99% modelling quality, the robot is tested using tick data. However, this doesn't mean that the backtest will be accurate.

Tick data testing require you to have 2 separate data feeds for accuracy, one for Bid and one for Ask prices. However, the data feed is usually based on Ask prices. A manual 2 pips (or whatever amount you chose) spread is applied to find the corresponding Bid prices. Thus, this test will be inaccurate. *(This is part of the reason we are reluctant to design robots on lower timeframes, more on this in future lectures)*

So what level of testing should we do?

This depends on the nature of your robot. If your robot requires information from lower timeframes, you should test using "Every Tick". The easiest method is to try both and see if there are discrepancies. If there is, you should seek to understand why.

CASE STUDY: Looking at BelindaSizing

BelindaSizing uses End-Of-Period data for her entry rules. Her hard stop loss is fixed at 30 pips and is not affected by lower timeframes. However, her trailing stop is affected by lower timeframes.

Trailing stop moves lower as the candlebar makes a new lower watermark. If we use "Open Prices", the trailing stop only shifts at the end of each bar. If we use "Every Tick", the trailing stop shifts after every 1min (or every tick depending on your lowest timeframe). These affect the overall results.

Hence, we remove the trailing stop option and test BelindaSizing using both "Open Prices" and "Every Tick". The results should be the same right? Let's see...

Strategy Tester Report

BelindaSizing_Complete

MetaQuotes-Demo (Build 792)

Symbol	EURUSD (Euro vs US Dollar)				
Period	4 Hours (H4) 2013.01.02 08:00 - 2013.12.31 19:59 (2013.01.01 - 2014.01.01)				
Model	Open prices only (only for Expert Advisors that explicitly control bar opening)				
Parameters	MagicNumber=12345; SignalMail=false; Lots=1; Slippage=3; UseStopLoss=true; StopLoss=30; UseTakeProfit=false; TakeProfit=0; UseTrailingStop=false; TrailingStop=30; sma_short=10; sma_long=40; atr_period=20; atr_shift=11; isSizingOn=true; Risk=1;				
Bars in test	2541	Ticks modelled	4081	Modelling quality	n/a
Mismatched charts errors	0				
Initial deposit	10000.00	Spread			2
Total net profit	2309.03	Gross profit	4192.07	Gross loss	-1883.04
Profit factor	2.23	Expected payoff	82.47		
Absolute drawdown	50.49	Maximal drawdown	987.67 (7.43%)	Relative drawdown	8.13% (950.82)
Total trades	28	Short positions (won %)	14 (28.57%)	Long positions (won %)	14 (35.71%)
		Profit trades (% of total)	9 (32.14%)	Loss trades (% of total)	19 (67.86%)
	Largest	profit trade	933.07	loss trade	-129.45
	Average	profit trade	465.79	loss trade	-99.11
	Maximum	consecutive wins (profit in money)	2 (1322.42)	consecutive losses (loss in money)	5 (-525.88)
	Maximal	consecutive profit (count of wins)	1322.42 (2)	consecutive loss (count of losses)	-525.88 (5)
	Average	consecutive wins	1	consecutive losses	3

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Parameters	MagicNumber=12345; SignalMail=false; Lots=1; Slippage=3; UseStopLoss=true; StopLoss=30; UseTakeProfit=false; TakeProfit=0; UseTrailingStop=false; TrailingStop=30; sma_short=10; sma_long=40; atr_period=20; atr_shift=11; isSizingOn=true; Risk=1;				
Bars in test	2541	Ticks modelled	10020724	Modelling quality	90.00%
Mismatched charts errors	0				
Initial deposit	10000.00	Spread			2
Total net profit	2455.72	Gross profit	4976.93	Gross loss	-2521.20
Profit factor	1.97	Expected payoff	68.21		
Absolute drawdown	62.70	Maximal drawdown	1231.21 (9.00%)	Relative drawdown	9.05% (1041.34)
Total trades	36	Short positions (won %)	15 (26.67%)	Long positions (won %)	21 (33.33%)
		Profit trades (% of total)	11 (30.56%)	Loss trades (% of total)	25 (69.44%)
	Largest	profit trade	957.62	loss trade	-129.00
	Average	profit trade	452.45	loss trade	-100.85
	Maximum	consecutive wins (profit in money)	2 (1357.22)	consecutive losses (loss in money)	5 (-555.00)
	Maximal	consecutive profit (count of wins)	1357.22 (2)	consecutive loss (count of losses)	-555.00 (5)
	Average	consecutive wins	1	consecutive losses	3

Different results? 36 trades on "Every Tick" mode? Interesting. Let's look at this in detail in the next lecture.